

## Fill the Nutrient Gap Analysis Cambodia: Rationale and Key findings







## **Meeting Objectives**

- Share main findings of the analysis.
- Discuss findings implications in terms of multi-sector interventions within the food system.
- Jointly identify national-level recommendations for programmatic decision-making:
  - Prioritization of interventions
  - Policy recommendations.





### **Primary Goals of the Analysis**

- Strengthen nutrition situation analysis, focussed on barriers of dietary intake, linked to decision-making.
  - Establish consensus on cost-effective policy and programmatic strategies to improve nutrition of key target groups adapted to the context.



### 2 Components of the Analysis

Reviewing secondary data and sources of information

Linear programming on the Cost of the Diet

Life-cycle approach with a focus on:

- Children <2 years</p>
- Pregnant and lactating women
  - Adolescent girls.



### The Fill the Nutrient Gap process in Cambodia







#### **1: DEFINE FOCUS**

Multi-stakeholder inception meeting

Consensus on key target groups and level of analysis

#### 2 & 3: ANALYSIS

Cost of the Diet market price data collection (MAFF/WFP)

Secondary data compilation & analysis

Cost of the Diet analysis and modelling

#### **4: RECOMMENDATIONS**

National multi-stakeholder workshop to present key findings

Joint identification of potential strategies to fill nutrient gaps across multiple sectors

March 2017

August 2017

### Multiple stakeholders engaged throughout the process



## Secondary data and information

Sourced data / grey literature / peer reviewed articles / reports

120+ reviewed

### Key secondary data sources (120+ reviewed)

Data Category	Key data sources	Cambodia	KISCEDIS OF CASHOEK Prime - Regime - Ring
Nutrition Situation	DHS 2010/2014; Wieringa <i>et al.</i> , 2016	HILLS AND	Census of Agriculture in Cambolia 2013 National Report on Final Census Results
Policy and Programmes	Weissman 2015; National Strategy for Food Security and Nutrition 2014-2018; National Nutrition Strategy 2009-2015; Laillou <i>et al.</i> , 2016	Demographic and Health Survey 2014	With the second seco
Access and availability of nutritious foods	Agriculture Census 2013; Socio-Economic Survey 2014; HKI FF4F situational analysis report 2016; Cambodian Agriculture in Transition: Opportunities and Risks 2015; NOURISH nutrition baseline 2016; WFP 2015/2016 El Niño Situation Analysis	Ational Statistics of Security and Nutrition (NSTSN 2014-2018)	IOURISH PROJECT
Nutrient intake	DHS 2014; IFReDI 2012/2016; Agriculture Census 2013; Socio-Economic Survey 2014; WorldFish 2016; UNICEF Sokhapheap Knhom project; GIZ, Plan International and NOURISH baselines; ARCH study and Pries <i>et al.</i> , 2016	Pranet N Council for Agencia Marcine (TC-ADD) in Council ou with the "scholar bulk Monitor (TC-ADD) in Council ou with the "scholar bulk Monitor (TC-ADD) in Council ou with the Agencia Council ou with the Information of the Agencia Council ou with the Information of the Agencia Council ou with the Information of the Agencia Council ou with the Agencia Council ou with the Information of the Agencia Council ou with the Agencia Council ou with the Information of the Agencia Council ou with the Agencia Co	ASELINE SURVEY REPORT COMPANY AND 442-A-14-0000 Wave day bare the chalaver SNV @ Modeline Chalaver Company and and Agriculture Company a
Local practices	UNICEF and HKI IYCF journey for urban and rural areas 2016; FAO MALIS project review 2015; HKI and FAO complementary feeding review	Cambodia Socio-Economic Survey 2014	
Optimisation & Cost of Diet	El Niño resilience expenditure data (FAO and WFP, 2016)	National Institute of Statistics Ministry of Planning Press First October 2015	



#### Estimate Staple Adjusted Nutritious diet (SNUT)

### Optimized Diet using the Cost of the Diet tool

Locally available food items



Possible diets meeting all nutrient requirements of the household

Least expensive nutritious diet Least expensive nutritious diet adjusted to include the main staples (SNUT)





### SNUT – NUTRITIOUS DIET

#### WHAT IT IS...

- Based on what is available in markets.
- Based on lowest cost.
- Adjusted to reflect basic local preferences.

#### WHAT IT IS NOT...

- Not necessarily what are actually eating.
- Not designed to provide recommendations of what people should eat.



# Standardized household size and composition for all regions using a lifecycle approach

### 5 person household:

- 1. Child aged 12-23 months
- 2. Child aged 6-7 years
- 3. Female aged 14-15 years
- 4. Lactating woman
- 5. Man.





#### 4 regions selected to represent ecological zone diversity



Cost of the Diet intervention modelling: How to improve the affordability of nutritious diets?

#### Strategies modelled at a household and individual level:

- 1. Improving access to <u>locally available nutritious foods</u>.
- 2. <u>Staple food fortification</u>.
- 3. Improving access to <u>Specialised Nutritious Foods</u> for specific target groups.
- 4. <u>Micronutrient supplementation</u>.
- 5. <u>Cash transfers</u> (conditional) to improve purchasing power.

Cost of the Diet intervention modelling: How to improve the affordability of nutritious diets?

#### **Assumptions:**

- Social Behaviour Change Communication required to improve demand creation for nutritious foods and improved dietary practices.
- Programming costs are not included in the modelling (Next step).

#### Strategies included based on:

- ✓ Ongoing interventions in Cambodia
- ✓ Potential new interventions (discuss feasibility)
- ✓ Evidence-based interventions.

# Fill the Nutrient Gap

Key Findings from the Secondary Data Review and Cost of the Diet Analysis



### **MESSAGE 1**

Undernutrition varies geographically and is impacted by:

- Socioeconomic factors
- Mother's nutritional status
- Shocks (natural and economic)

#### High infant and young child (0-59 months) undernutrition despite decreases over the past 20 years



Source: DHS 2000, 2005, 2010, 2014

# Stunting is high throughout the country particularly in the Plateau/Mountain areas...



Source: DHS, 2014

#### Wasting prevalence is high

• Prevalence:

10% (6.5 - 15.1)

- Burden of Severe Acute Malnutrition:
   92 807 children under 5
- High variance across provinces
- High variance within provinces
- Need more data on provincial wasting.

#### Anaemia in women and children under 5 is a severe public health problem



Source: DHS, 2014

- The cause of anaemia in WOMEN is unknown.
- Over 40% anaemia in CHILDREN is not caused by nutritional factors.

Low iron deficiency in children suggests other factors play a role:

- Genetic disorders (hemoglobinopathies)
- Inflammation
- Hookworm infection
- Zinc and folic acid deficiency.



Source: Wieringa et al., 2016

# Only the wealthiest households are slightly protected from undernutrition



Source: DHS, 2014

#### Household Income Distribution...



Percentile (%)

# Child undernutrition is strongly linked to mother's nutritional status



Source: DHS, 2014

# National progress on undernutrition is susceptible to shocks



Source: DHS 2000; 2005; 2010; 2014



## MESSAGE 2

The double burden of malnutrition is rising

## **Risk factors:**

- Rapid urbanisation
- Excessive consumption of rice
- Snack food consumption in children

# Although the double burden in Cambodia is lower than in other South East Asian countries...



Stunting in children <5 years</p>
Female overweight

Source: Haddad, Cameron and Barnett, 2015

# ...Overweight and obesity are rising particularly in women of reproductive age



Source: DHS, 2014

Cambodia is rapidly urbanising-5<sup>th</sup> highest GDP growth of 68 developing countries (1992-2012)



Source: World Vision, 2014; UNFPA, 2013

### Rice has major cultural significance in Cambodian diets

'There is not a dish in Cambodia that does not start with rice'

Consumption of other foods are considered to be 'side dishes' to accompany the rice, with better off households consuming more side dishes.

In the lean season only rice with chili salt is consumed by many households in Ratanakiri.

When current rice consumption was modelled in the nutritious diet nutrient requirements could **not** be met



Source: Cost of the Diet Analysis
## Unhealthy snack food consumption is high among children



Unhealthy snack food consumption\* could increase the cost of the diet for a child under 2 on average by 38%

\*1 portion/week of biscuit/cracker, cake, candy, potato crisps and fruit juice



Source: Cost of the Diet Analysis

## Fill the Nutrient Gap

## MESSAGE 3

Despite economic development, household access to sufficient and nutritious food remains a challenge, particularly for poor rural households engaged in agriculture

## Most households produce own rice but purchase micronutrient rich foods at the market



Bought these foods Own produce (from agriculture, fishing and forests)

Source: National Agriculture Census, 2013

# ...or forage for micronutrient rich foods (especially during periods of food insecurity)



Source: Cambodia Socio-Economic Survey, 2014

## However nationally market access is fairly good



Source: National Agriculture Census, 2013

#### A CHANGE IN THESE FACTORS MAY LEAVE HOUSEHOLDS VULNERABLE:

#### INCOME

 Households that experienced >25% income loss from El Niño more likely to have poor dietary diversity and experience hunger.

Source: DHS, 2014; FAO 2016; WFP, UNICEF, Plan International, 2017

## A CHANGE IN THESE FACTORS MAY LEAVE HOUSEHOLDS VULNERABLE:

 Households that experienced >25% income loss from El Niño more likely to have poor dietary diversity and experience hunger.

#### **FOOD PRICES**

INCOME

 Lower reduction in stunting and wasting during 2005-2010 associated with flooding and food price crisis.

Source: DHS, 2014; FAO 2016; WFP, UNICEF, Plan International, 2017

## A CHANGE IN THESE FACTORS MAY LEAVE HOUSEHOLDS VULNERABLE:

#### INCOME

 Households that experienced >25% income loss from El Niño more likely to have poor dietary diversity and experience hunger.

#### FOOD PRICES

• Lower reduction in stunting and wasting during 2005-2010 associated with flooding and food price crisis.

#### FOREST COVERAGE

- National forest cover is decreasing (from 61% in 2002 to 53% in 2016)
  - Ratanakiri: used to be an economy of self sufficiency. Now access to land and forest has decreased and many feel more food insecure.



## MESSAGE 4

The quality and diversity of households' diet is a concern

## Due to:

- Limited crop diversification
  - Dietary preferences
    - Economic access

### Food availability is not a barrier to households consuming a nutritious diet: Average of 270 food items found in the markets



#### Source: Cost of the Diet Analysis

## National productivity figures may be masking household disparities in diet sufficiency



Source: WFP, 2016; FAO, 2017

## Rice dominates national production...



## ...and consumption



Source: Inland Fisheries Research and Development Institute, 2012

Households with inadequate dietary diversity have declined significantly...



#### Items least frequently consumed by households

- Dairy products consumed less than one day per week.
- Pulses/ legumes/ dried nuts and edible seeds consumed 1-2 days per week.
- Eggs consumed **1-2** days per week.
- Fruit consumed **2-3** days per week.

## ...but disparities remain



Inadequate dietary diversity is highest among poorest households and higher in rural vs urban.

#### Poor dietary diversity highest in east/ northeast



Source: CSES data, 2014



## MESSAGE 5

## The relationship between malnutrition indicators and economic access to a nutritious diet vary

Stunting prevalence is high in areas of low AND high non-affordability

### On average 21% of households cannot afford a nutritious diet – worst in Plateau/Mountain



Mountain and Plateau regions have high stunting **and** expensive cost of the diet **and** high non-affordability...



## On the average cost of the staples (price per 100g): Tonle Sap - lowest prices Plateau/Mountain - highest prices



...but median expenditure is fairly similar across each zone thus non-affordability in plateau/mountain is driven by prices

#### Plateau/Mountain

Quintile 1: 89,000 KHR Median: 123,000 KHR Quintile 3: 143,000 KHR

#### Coastal

Quintile 1: 106,000 Median: 147,00 KHR Quintile 3: 225,000 KHR

#### ...but these regions also have the lowest population density



Source: General Population Census of Cambodia 2008

### Other regions have high stunting despite a cheaper cost of diet and low non-affordability



**Other factors** are therefore contributing to the high stunting prevalence:

- Culture, beliefs, knowledge around nutritious foods, IYCF practices and diet of mothers during pregnancy and lactation
- Health practices
- Worms
- Sanitation.



## **MESSAGE 6**

Women's diets (particularly during pregnancy and breastfeeding) are poor and contribute to malnutrition in their children

## **DUE TO:**

- Knowledge and beliefs
  - Time

In the cost of the modelled household diet the **adolescent girl** and **lactating woman** are the most expensive



No national data on women's diets – Provincial studies suggest dietary diversity is poor



Source: Amry & Weingartner, 2016; Plan International, 2016

Despite higher requirements... Data suggests that women's diets do not change during pregnancy or breastfeeding



#### **POOR DIETARY HABITS COULD BE DUE TO:** Knowledge and beliefs

- Women generally not prioritised at meal times.
- Not aware of specific nutritional needs and poor/lack of nutrition counselling during anti-natal care.
- Prioritizing rice (low awareness on need for dietary diversity).
- Desire for easy delivery:
  - Eating less
  - Food taboos (eggs, coconuts, eel).
- Need to heat body post partum to prevent complications/death:
  - Reduce food consumption to very limited diet
  - Drink wine with herbs.

Time

 Garment factory workers have limited time for lunch so snack on sugary desserts or packaged food.

Source: Wallace et al., 2014; HKI/UNICEF, 2017; WorldFish, 2016; Plan International, 2017

Meeting the needs of adolescent girls is already expensive pregnancy/lactation increases diet costs and vulnerability



Source: DHS, 2014; Cost of the Diet Analysis

## Fill the Nutrient Gap

**MESSAGE 7** 

Breastfeeding practices are almost universal. Sustaining the gains will be challenging. Specific attention is needed in urban areas.

## From 2000-2010 Cambodia made great strides to improving breastfeeding indicators...



Source: DHS 2000, 2005, 2010, 2014

... the result of a Nationwide exclusive breastfeeding campaign (2004)

#### Mass media:

TV and radio spots; breastfeeding song, 24-episode TV soap opera.

#### Interpersonal communication:

Health staff trainings; NGO campaigns; community groups and volunteers.

#### Key messages:

Early initiation; exclusive breastfeeding; "not even water".

Source: Ministry of Health Cambodia, 2015

## However sustaining these improvements will be challenging...



Source: DHS 2000, 2005, 2010, 2014

### **Breastfeeding challenges...**

- Mother's need to return to work
- Extensive promotion of Breastmilk Substitutes
- Behaviours and beliefs that limit breastfeeding.

## Rapid urbanisation could exacerbate problems associated with urban breastfeeding practices



Source: Open Development Cambodia, 2017
# Cost of the Diet analysis emphasises the economic benefits of breastfeeding



Nutritious diet for a breastfeeding child

Nutritious diet for a non breastfeeding child





# **MESSAGE 8**

Complementary feeding practices are suboptimal and an important barrier to nutrient intake in children aged 6-23 months

# DUE TO:

- Economic challenges
- Mothers/Caregivers time
  - Knowledge and beliefs

# Trends in stunting and anaemia suggest inadequate nutrient intake 6-12 months



# Only 30% of children 6-23 months are fed a Minimum Acceptable Diet



Source: DHS, 2014

## COULD BE DUE TO:

#### **Economic challenges:**

- Too expensive to buy ingredients for enriched *borbor*.
   Time
- Takes too long to prepare separate meals for child.
- Mothers/caregivers buy *borbor* from vendors to save time (likely to be watery and unenriched).

#### Knowledge and beliefs:

- Rice is nutritious enough.
- Certain fruits (guava, mango, papaya), meat, fish can cause a child to become sick (fish may give worms).
- Children 12+ months too old for *borbor* so are fed family foods.
- Not within the local culture to mix food groups or mash foods.

# The costs of local complementary food options is an important factor to be considered



# Fill the Nutrient Gap

# **MESSAGE 9**

Context specific integrated packages of interventions have the greatest potential to improve affordability of a nutritious diet

#### TO THINK ABOUT:

Should areas with high non-affordability, high stunting rates and high population density be prioritised for food based interventions?

Should Social Behaviour Change Communication and health interventions be prioritised in areas with high stunting and low non-affordability?

Who should bear the costs of the interventions?

How can convenience be factored in when selecting interventions?

# Modelling to improve access to nutrients

Children	6 to	o 23	months
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Intervention	Transfer Modality	Possible Entry Points
Num Trey (Specialised Nutritious Food)	Voucher/In-kind Market (500 KHR)	<ul> <li>Health</li> <li>Social Protoction</li> </ul>
NOURISH Fish Powder	Voucher/In-kind Market (\$1.25) Market (\$2.50)	<ul> <li>Markets (Private Sector)</li> </ul>

School aged children			
Intervention	Transfer Modality	Possible Entry Points	
Home Grown School Feeding Breakfast (non-fortified and fortified rice)	Voucher/In-kind	• Education	
Home Grown School Feeding Lunch (non-fortified and fortified rice)	Voucher/In-kind		

# Modelling to improve access to nutrients

Adolescent girl			
Intervention	Transfer Modality	Possible Entry Points	
Iron and Folic Acid Supplement	In-kind	• Health	
Fresh Food Voucher (Animal source food + Vegetables)	Voucher	<ul> <li>Agriculture</li> <li>Social Protection</li> <li>Markets <ul> <li>(Private Sector)</li> </ul> </li> </ul>	

Pregnant and Lactating Women			
Intervention	Transfer Modality	Possible Entry Points	
Iron and Folic Acid Supplement	In-kind	• Health	
Fresh Food Voucher (Animal source food + Vegetables)	Voucher	<ul> <li>Agriculture</li> <li>Social Protection</li> <li>Markets <ul> <li>(Private Sector)</li> </ul> </li> </ul>	

# Modelling to improve access to nutrients

Household				
Intervention	Transfer Modality	Possible Entry Points		
Fortified rice (8 micronutrients)	Market	• Hoalth		
Fortified oil (vitamin A and D)	Market	<ul><li>Agriculture</li></ul>		
Fortified fish sauce (iron)	Market	Social Protection		
Fortified soy sauce (iron)	Market	Markets     (Drivete Sector)		
Fortified foods in combination	Market	(Private Sector)		
HKI vegetable gardens	Own production	Agriculture		
HKI poultry and eggs	Own production	Agriculture		
WorldFish and HKI fish ponds	Own production	Agriculture		
Cash transfer (\$10.80/month)	In-kind	<ul><li>Health</li><li>Social Protection</li></ul>		
Cash transfer (\$6/month)	In-kind	<ul><li>Education</li><li>Social Protection</li></ul>		

Child 6 to 23 months: Num Trey and NOURISH fish powder given in-kind were the most effective but might be too expensive at market price



# Num Trey is more price competitive and it is more nutritious than unhealthy packaged snack foods



# School aged child: Home grown school feeding (HGSF) lunch ration was the most effective

#### NOTE: Non fortified rice showed similar effectiveness



# **Adolescent girl:**

An iron/folic acid supplement and a fresh food voucher were similarly effective



Nutritious diet 🛛 📓 Iron & Folic Acid Supplement

Fresh food voucher

**Pregnant and Lactating Woman:** NOURISH fish powder in-kind was the most effective but might be expensive at market price



# Household:

Home production interventions could reduce the cost, improve access to nutritious foods and reduce non-affordability of a nutritious diet



# Household:

# Fortified rice could somewhat (5%) reduce the cost of a nutritious diet



#### TO THINK ABOUT:

Do the proposed fortified staple foods address the micronutrient gaps?

What needs to happen (e.g. pricing and demand) in order to make market based delivery of interventions (e.g. fortified rice) a feasible strategy?

What alternative public delivery platforms could be leveraged to use fortification to increase access to nutrients at critical times?

Engaging in strategic alliances with private sector.



# PACKAGES TO BE CONSIDERED BASED ON THE MODELLING

# Household interventions



# A package of targeted interventions:

- Num Trey for Children 6 months 2 years.
  - NOURISH Fish powder for Pregnant and Lactating Women.
- Fresh Food Vouchers for Adolescent Girls.
  - Home Grown School Feeding for School Aged Children.

# combined with household interventions:

- Home Gardening
  - Fortified Rice
- could reduce non-affordability by
  - 18 35 percentage points

### Intervention packages to improve affordability



Fortified Rice

# Household:

# Cash Transfers can reduce non-affordability by 6 to 8 percentage points

Region	% of Households that cannot afford a Nutritious Diet	Cash Transfer \$6	Cash Transfer \$10.80
Battambang/Pailin	20%	16%	14%
Kampot/ Kep	22%	20%	18%
Prey Veng	25%	20%	17%
Ratanak Kiri/Mondul Kiri	66%	63%	60%

#### Assumptions:

- 1. All of the cash provided is used on food
- 2. The cash transfer is provided to all households that cannot afford a nutritious diet

# Fill the Nutrient Gap

**MESSAGE 10** 

The food system provides a range of promising entry points, across multiple sectors both public and private, to improve access to nutrients for vulnerable groups



## **Potential Entry Points**





#### **Social Protection:**

- Cash transfers
- Linking farmers to safety nets
- Shock preparedness & response (food banks)

## Regulation of snack foods and BMS

# Endorsement for nutritious foods

#### Fortification

Compliance monitoring

## ENABLING ENVIRONMENT

Nutrition in preparedness structures

Maternity leave, Breastfeeding friendly work places National vs D&D implementation

Taxes and tariffs Markets: Availability of affordable, safe, nutritious and convenience foods

### SUPPLY AND DEMAND

Demand creation for healthy diets and lifestyles

Private sector messaging including segmentation

Social behaviour change communication and Nutrition education -Community health, Agricultural extension officers, Conditional cash transfers etc.

# Fill the Nutrient Gap 700

Nutrition situation analysis framework and decision tool



Photo credit: WFP/Chu Cancun

# Groupwork



# Groupwork

# 4 GROUPS

- 1. Public Health and Social Behaviour Change Communication.
- 2. Fresh Foods and Agriculture.
- 3. Processed Foods including Food Fortification.
- 4. Social Protection.

Template to work from Facilitator and Rapporteur

# Groupwork

### **STEPS**

- 1. Fill in the names of the people sitting at your table.
- 2. For your sector, discuss the implications from the Fill the Nutrient Gap analysis findings.
- 3. Decide on the 3 most important priorities.
- 4. For each of the 3 priorities, determine the target group (e.g. adolescent girls) and the specific entry points for interventions (e.g. school feeding).
- 5. Decide on a recommended intervention to address the target group through the specific entry point.
- 6. Define key steps to be undertaken to achieve the reommendation

### TO THINK ABOUT:

Should areas with high non-affordability, high stunting rates and high population density be prioritised for food based interventions?

Should Social Behaviour Change Communication and health interventions be prioritised in areas with high stunting and low non-affordability?

Who should bear the costs of the interventions?

How can convenience be factored in when selecting interventions?

#### TO THINK ABOUT:

Do the proposed fortified staple foods address the micronutrient gaps?

What needs to happen (e.g. pricing and demand) in order to make market based delivery of interventions (e.g. fortified rice) a feasible strategy?

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#### Under 5 Stunting prevalence

